



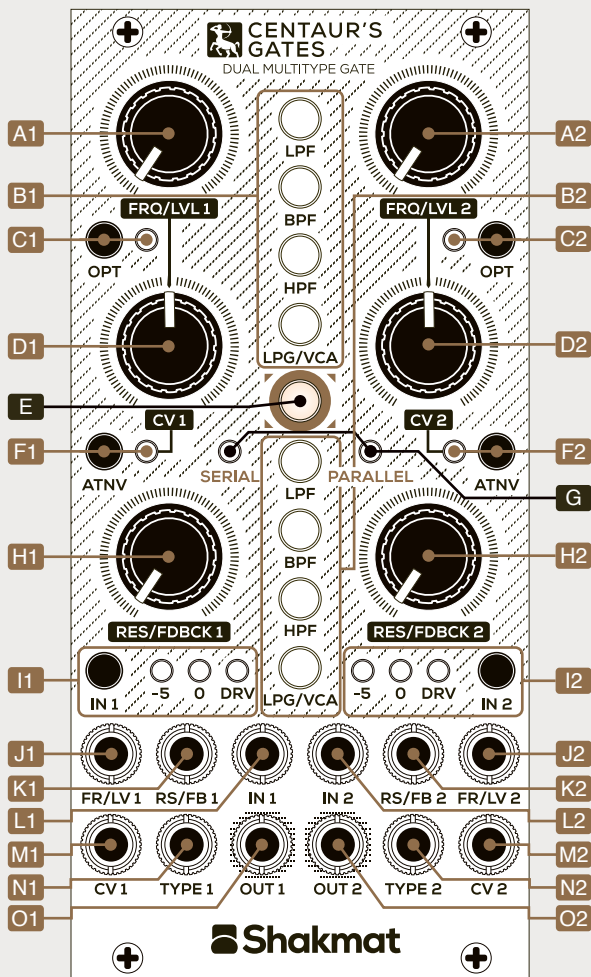
Shakmat Centaur's Gates

● 12HP Eurorack Module

● Built & designed in E.U.

● www.shakmat.com





Introduction

The Centaur's Gates is a fully analog signal path dual multitype gate. Each of its two channels can take many forms : a smooth and warm two-pole filter, a ready to ping low-pass gate (LPG), a VCA with a distorting feedback loop, or an aggressive filter reminiscent of the infamous Korg MS20. Both versions of the filter are available in three modes (low-pass, band-pass and hi-pass), bringing to eight the number of types a channel can take the form of.

The extended sonic palette the Centaur's Gates delivers is not its only asset as the module includes handy features such as serial/parallel routing, vactrol analogemulation, channels control link, variable input gain with drive, Select Bus compatibility, and last but not least, clickless switching for channel type selection via CV.



The Centaur's Gates has two identical channels. Therefore, controls of each

channel are identified by the same letter followed by a channel number. If no channel is specified, only the capital letter is used. The link and serial/parallel controls do not refer to a specific channel.

- A** Frequency/level potentiometers
- B** Type selection buttons
- C** Opto emulation buttons & LEDs
- D** CV attenuation potentiometers
- E** Channel link & serial/parallel button
- F** Attenuverter buttons & LEDs
- G** Serial/parallel LEDs
- H** Resonance/feedback potentiometers
- I** Input gain buttons & LEDs
- J** Frequency/level CV inputs
- K** Resonance/feedback CV inputs
- L** Audio inputs
- M** Attenuation CV inputs
- N** Type & style CV inputs
- O** Audio outputs

Installation


The Centaur's Gates requires a standard 2x8 pin eurorack power cable. Make sure that the red stripe on the cable matches the -12V side of the Centaur's Gates power header.

Basics

Both channels of the Centaur's Gates have an audio input and output. Those inputs and outputs are normalized as described in the serial/parallel chapter of this guide. Each channel offers three main parameters: the type, the frequency/level and the resonance/feedback.


Types & Styles

The types define the function of a channel. Four types are available: low-pass filter, band-pass filter, hi-pass filter and LPG/VCA. Each type is available in two styles, green and red. To switch between the red and green styles, first select a type thanks to the type buttons [B], then press the button [B] again to switch to the other color style. It is also possible to select the type and style thanks to the type CV input [N]. Note that the type switching is clickless (this feature can be disabled, see the option section for more details).



The green style filters are clean, with a gentle bubbly resonance, without becoming prone to self-oscillation. The green LPG/VCA style is a low-pass gate for which the resonance/feedback knob adds a boost in volume when cranked up.

LPG/VCA
HPF
BPF
LPF



The red style filters are more aggressive and have screaming resonances. The red LPG/VCA style is a VCA with an overdriven feedback loop allowing parallel distortion at low settings or destructive feedback at higher settings.

LPG/VCA
HPF
BPF
LPF

Frequency/Level

The frequency/level parameter adjusts the frequency of the filter or the level of the LPG/VCA. This parameter can be controlled with the frequency/level potentiometer [A] and via the frequency/level CV input [J]. Additionally, a dedicated CV input [M] and potentiometer [D] allow for attenuation of the CV signal. This attenuation potentiometer [D] offers two switchable behaviors thanks to the attenuverter button & LED [F]:

Attenuator: the signal is fully attenuated when the CV potentiometer [D] is fully counterclockwise and full level when fully clockwise.

Attenuverter: when the CV potentiometer [D] is at noon, the signal is fully attenuated (output is zero). Turning the potentiometer [D] clockwise from noon increases the signal's amplitude without inversion, reaching full amplitude when fully clockwise. Turning the potentiometer counterclockwise from noon both attenuates and inverts the signal, with full amplitude and inversion when fully counterclockwise.



For the LPG/VCA type, the level potentiometer fully opens the LPG or VCA around 2 o'clock.

Resonance & Feedback

The resonance/feedback parameter sets the filter's resonance or the LPG/VCA feedback. This parameter has a dedicated potentiometer [H] and CV input [K].

CV Normalization & Link

By default, CV2 input [M2] is normalized to CV1 input [M1]. This means that the signal received into CV1 input [M1] is sent to CV2 input [M2] when nothing is inserted into it. The Centaur's Gates has a link function which allows the first channel controls to be added to the controls of the second channel. In other words, when the link function is activated, the first channel controls act on both channels, and the second channel controls act as a bipolar offset. In order to get the same frequency/level value for both channels, channel 2 frequency/level has to be at noon. Turning the potentiometer counterclockwise will cause the second channel to close more than the first channel, as turning it clockwise will cause the second channel to open more than the first channel. This behavior is carried over to the resonance/feedback potentiometers. To activate the link function, press the link button [E].

When the link function is activated, the frequency/level CV input of the second channel [J2] is normalized to its first channel counterpart. This means that it is receiving the attenuated or attenuverted signal of the first channel frequency/level CV input [J1]. For some patches, the link function improves the ergonomics of the module, see the patch example section of this manual for more information.

Serial & Parallel

To switch between serial and parallel configurations, hold the link button for two seconds [E]. The serial and parallel LEDs [G] show the active configuration. In serial mode, input 2 [L2] is normalized to output 1 [L1]. In parallel mode, input 2 [L2] is normalized to input 1 [L1] and output 2 [O2] is the sum of the two channels unless a cable is inserted into output 1 [O1].

Gain

The input gain LEDs and buttons [I] set the input gain to one of the 3 values: -5dB, 0dB and drive. Reducing the gain to -5dB changes the filter's sounds, and gives the green style filters a softer and more liquid sound. The inputs expect a 10V peak-to-peak signal and will distort any signal with a greater level. The drive option provides a 3dB boost to a soft clipper, resulting in a pleasant and warm saturation for modular level signals.

Opto Emulation

The opto function simulates the behavior of classic vactrols. Those vintage components are known for their slow response to control voltages resulting in natural attack and decay times. This characteristic is particularly enjoyable in a low-pass gate context but also provides interesting results with other types. To activate the opto emulation, press the opto button [C].

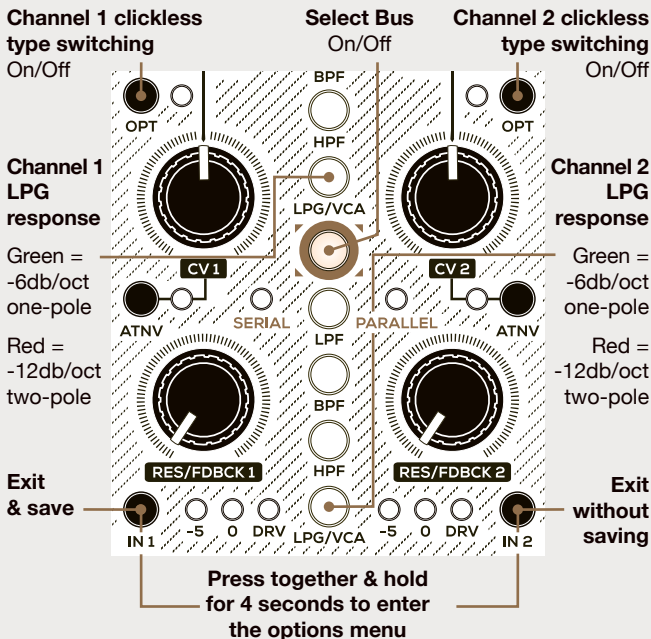
Select Bus

The Select Bus protocol enables digital communication between modules through the ribbon cable used for power. Communication occurs via pins 15 & 16 of the power connector, making it available only for modules employing large power cables (16 pins to 16 pins). To enable Select Bus communication, a module like the Harequin's Context, needs to be set as a transmitter and one or several modules must be set as receivers. The Centaur's Gates handles the Select Bus protocol as a receiver allowing its presets to be loaded and saved using a Select Bus transmitter module. All the modules involved in the communication need to be connected to the same bus board.

The Centaur's Gates has a non-volatile memory of 16 presets. A preset stores the selected types, opto function, attenuverter mode for the CV inputs, gains, channel's link and serial/parallel configurations.

Options Menu

The options menu allows to enable (or disable) Select Bus, clickless type switching, and sets the LPG frequency response. To enter the option menu, press in 1 & in 2 buttons [I1&I2] together for 4 seconds. To exit the options menu and save changes, press the in 1 button [I1]. To exit the options menu without saving, press the in 2 button [I2].



Applications & Patch Examples

Low-pass filter and VCA

This is an obvious application using the two channels unlinked and in serial configuration. The first channel is set to low-pass filter, the second channel is set to VCA. Both channels are controlled from a single CV connection to CV1 input. The second channel gain setting and the VCA distorted feedback loop add some grit to the patch.

Gnarly vintage Japanese filtering emulation

The first channel is set to red hi-pass filter, the second channel is set to red low-pass filter, serial configuration is active and the channels are unlinked. Crank up the resonance, add some drive with the gain settings and enjoy a screaming Centaur's Gates.

Four-pole filtering

Set both channels to the same filter type, active the serial configuration and link function. The first channel's frequency/level potentiometer controls the filter cut-off frequency. The second channel's frequency/level potentiometer should be set at noon. The first channel's resonance/feedback potentiometer controls the resonance. The second channel's resonance/feedback potentiometer should be set at noon. Turn the CV2 potentiometer fully clockwise, CV1 input and CV1 potentiometers control the filter's cut-off frequency.

Noise and bleep machine

Set both channels to any red filter in serial or parallel configuration. Make sure that the link function is inactive. Patch output 1 to CV2 input and output 2 to CV1 input, set both resonances fully clockwise and listen to the second output. The cross-frequency modulation causes a very chaotic behavior, leading to harsh sonic materials. From that basic patch, for even more feedback and chaos, explore different tricks such as sequencing the types or sending the second channel's output to the first channel's input (and vice versa).

Variable bandwidth four-pole band-pass filter

The first channel is set to the green hi-pass filter, the second channel is set to the green low-pass filter, serial configuration and the link function are activated. The first channel's frequency/level potentiometer controls the band-pass cut-off frequency, the second channel's frequency/potentiometer controls the bandwidth (this potentiometer should be set at noon or higher).

Stereo filtering

Set both channels to the same filter mode and activate the parallel configuration and link function. This patch works with a mono or a stereo input signal. Of course, both outputs need to be connected. Set the second channel's frequency/level and feedback/resonance potentiometers at noon and turn the CV2 potentiometer fully clockwise. The second channel's frequency/level and feedback/resonance potentiometers control both channels at the same time, same for any modulation signal received into the CV1 input.

Stereo panner

Set both channels in VCA mode, without any feedback. Activate the parallel configuration and link function. This patch works with a mono or stereo input signal. Both outputs need to be connected. Set the second channel's frequency/level potentiometer at noon and turn the CV2 potentiometer fully counterclockwise in attenuverter mode. The first channel's frequency/level potentiometer controls the level for both channels. Send a modulation signal to CV1 input. As CV2 is set as an inverter, a modulation signal opening the first channel closes the second channel and vice versa. CV1 potentiometer sets the maximum modulation depth for both channels. Try to experiment this patch with different filter types or even with the low-pass gate.

Dual-peak filtering

Set both channels to the red or green band-pass mode, activate the parallel configuration and use only the second channel's output. This configuration, which offers the sum of two resonant band-pass filters, is known as dual-peak filtering. The green band-pass filters offer a nice liquid feeling and the red ones give more emphasis on harmonics.

Notch filtering

Set the first channel in low-pass filter mode and the second one in hi-pass filter mode. Turn on the link function, activate the parallel configuration and use only the second channel's output while sending the signal into the first channel's input. This configuration sums a low-pass filter and a hi-pass filter, resulting in a notch. The first channel's frequency potentiometer sets the frequency of the notch and the second channel frequency potentiometer sets the notch width.

A full voice

Set the first channel to any red filter mode and close to self-oscillation. Set the second channel to low-pass gate type. Activate the opto emulation and the serial configuration. Make sure that the link function is inactive. Ping the first filter's input with a trigger and send this trigger to the CV2 input. Control the first channel's frequency/level CV input with a stepped CV source. As a bonus, you can send a sine wave to the attenuated CV1 input in order to add some FM touch.

Type scanning

This technique can be used in a lot of different configurations but let's start with a very simple patch which provides great results: send a basic waveform into the first channel's input and use a sequencer or a modulation generator to modulate the type CV input. While scanning through different types from both styles it is interesting to crank up the resonance/feedback potentiometer in order to increase the sonic difference between the red and green styles.

Specifications

Size

12 HP

Depth

21 mm

Current Draw

190 mA @ +12V

150 mA @ -12V

CV inputs

-10 to +10V

Type CV inputs

-5 to +5V

Audio input

-5 to +5V

Audio output

-8 to +8V

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